

AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A method of separating lightweight grains from raw grains using a vertical cylinder having, in the order from the top, an exhaust port, a cylindrical primary separation space, a conical secondary separation space, and an unloading port, comprising:

a primary separation step of introducing raw grains containing the lightweight grains, which are to be separated, together with primary air into the cylindrical primary separation space in ~~the~~ a direction to allow the ~~material~~ raw grains to whirl upward in a whirling motion along ~~the~~ an inner wall surface of ~~the cylindrical section of the~~ cylindrical primary separation space, so that most part of the lightweight ~~substances~~ grains contained in the raw grains are guided to the exhaust port by ~~the~~ upwardly flowing airflow air in the ~~pipe~~ cylindrical primary separation space and the raw grains and part of the lightweight grains stay in a ~~certain~~ predetermined flow area by frictional resistance with respect to the inner wall surface generated by the whirling motion and then are dropped into a the conical secondary separation space by their own weight;

a secondary separation step of blowing secondary air to ~~the~~ a lower portion of the conical secondary separation space through a slit ~~to the center~~ toward a beveled surface of a stabilizer provided centrally in the lower portion of the conical secondary separation space, and toward the raw grains dropping into ~~the conical section in the~~ conical secondary separation space ~~on the downside in~~ from the primary separation step so as to blow ~~the~~ lightweight substances in the raw grains upward to the cylindrical primary separation space; and

a tertiary separation step of blowing tertiary air upward from below the conical secondary separation space to blow remaining lightweight grains to the conical secondary separation space;
and

a discharging step of taking the raw grains with the lightweight grains removed

continuously out from the unloading port at ~~the~~ a lower portion of the conical secondary separation space section.

2. (Cancelled)

3. (Currently Amended) A device for ~~implementing the method of Claim 1~~ separating lightweight grains from raw grains, comprising:

a cylindrical section having an exhaust port at ~~the~~ an upper portion thereof;

a conical section provided below the cylindrical section;

a raw grain feeding unit for feeding raw grains into the cylindrical section ~~the direction~~ to whirl the raw grains upward along ~~the~~ an inner periphery of the cylindrical section above the conical section;

a lightweight grain separating unit for taking the lightweight grains in the raw grains out from the upper portion of the cylindrical section;

a secondary air blowing unit for blowing the secondary air toward the raw grains being dropped from the cylindrical section upward at ~~the~~ a lower portion of the conical section to move ~~the~~ fine grains upward to the cylindrical section wherein the secondary air blowing unit blows a high-speed fresh secondary airflow into a chamber that surrounds a slit formed between a beveled surface of a stabilizer and a lower end of the conical section; and

a tertiary air blowing unit, the tertiary air blowing unit blowing tertiary fresh air from below the conical section into a chamber bounded by the stabilizer and a unit for discharging

separated heavier material away from the stabilizer

~~a unit for discharging raw material from the lower portion of the conical section.~~

4. (Currently Amended) A device according to Claim 3, wherein the raw grain feeding unit is an upwardly oriented tangent induction pipe opening on ~~the~~ an inner wall surface of the cylindrical section or an induction unit with a spinner disposed at ~~the~~ a center of ~~the~~ a lower portion of the cylindrical section.

5. (Original) A device according to Claim 3, wherein the secondary air blowing unit comprises a secondary air intake chamber connected via a slit provided at the lower end of the conical section for taking compressed air therefrom.

6. (Cancelled)

7. (Cancelled)

8. (Currently Amended) A method of separating powder bodies ~~and the like~~ from grains using a vertical cylinder having, in ~~the~~ order from the top, an exhaust pipe, a cylindrical primary separation space, a conical secondary separation space, and an unloading port, comprising:

a primary separation step of introducing grains containing the powder bodies ~~and the like~~, which ~~is~~ are to be separated, together with primary air into the cylindrical primary separation

space in ~~the~~ a ~~whirling~~ direction ~~of whirling~~ along ~~the~~ an inner wall surface of the cylindrical ~~section of the~~ primary separation space, moving most ~~part~~ of the powder bodies ~~and the like~~ contained in the grains upward by airflow in the exhaust pipe, separating and discharging the powder bodies ~~and the like~~ from an opening in the exhaust pipe ~~opening in the~~ a direction opposite to the whirling direction, and allowing the grains to drop into the conical secondary separation space by their own weights;

a secondary separation step of blowing secondary air to ~~the~~ a lower portion of the conical secondary separation space through a slit ~~to the center~~ toward the ~~raw~~ grains dropping into the conical ~~section the~~ secondary separation space ~~on the downside in~~ from the primary separation step so as to blow ~~the~~ remaining powder bodies ~~and the like~~ in the grains upward to the cylindrical primary separation space; ~~and~~

a tertiary separation step of blowing tertiary fresh air upward from below the conical secondary separation space to blow the remaining powder bodies to the conical secondary separation space; and

a discharging step of taking the grains continuously out from ~~an~~ the unloading port at the lower portion of the conical secondary separation space.

9. (Cancelled)

10. (Currently Amended) A device for separating powder bodies ~~and the like~~ from grains comprising:

a cylindrical section having an opening of an exhaust pipe for discharging the powder

bodies ~~and the like~~ at ~~the~~ an upper portion thereof;

a conical section provided on ~~the~~ a downside of the cylindrical section;

a grain feeding unit for feeding grains containing the powder bodies ~~and the like~~ into the cylindrical section so as to whirl in the cylindrical section in ~~the~~ a direction ~~not opposing away from~~ the opening of the exhaust pipe along ~~the~~ an inner periphery of the cylindrical section;

~~the~~ a secondary air blowing unit for blowing high-pressure air at ~~the~~ a lower portion of the conical section from a circumferential slit on the conical section toward the grains containing the powder bodies ~~and the like~~ being dropped from the cylindrical section to move the powder bodies ~~and the like~~ upward to the cylindrical section; ~~and~~

a tertiary air blowing unit for blowing tertiary fresh air from below the conical secondary separation space; and

a unit for discharging the grains from below the secondary air blowing unit.

11. (Cancelled)

12. (Currently Amended) A device according to Claim 10, wherein the secondary air blowing unit blows a high-speed secondary airflow through the slit toward a stabilizer provided at ~~the~~ a lower end of the conical section ~~from the slit~~.